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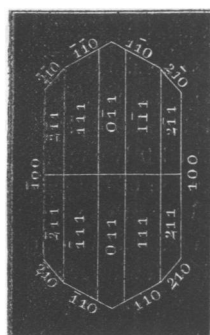
- II. "On the forms of some Compounds of Thallium." By W. H. MILLER, M.A., For. Sec. R.S., Professor of Mineralogy in the University of Cambridge. Received December 13, 1865.

Nitrate of Thallium.

Prismatic, $010, 011 = 38^\circ 8'1$; $100, 110 = 62^\circ 56'3$.

$100, 011$	$90^\circ 0'$
$100, 110$	$62^\circ 56'3$
$100, 210$	$44^\circ 23'$
$100, 111$	$68^\circ 6'5$
$100, 211$	$51^\circ 13'$
$110, 111$	$34^\circ 57'5$
$011, 0\bar{1}1$	$103^\circ 44'$
$011, 211$	$38^\circ 47'$
$110, \bar{1}10$	$54^\circ 7'4$
$210, 211$	$28^\circ 46'$
$210, \bar{2}10$	$91^\circ 14'$
$011, 111$	$21^\circ 53'5$
$111, \bar{1}11$	$43^\circ 47'$
$111, 1\bar{1}1$	$93^\circ 44'8$
$111, \bar{1}\bar{1}1$	$110^\circ 5'$
$211, \bar{2}11$	$77^\circ 34'$
$211, 2\bar{1}1$	$75^\circ 38'$
$211, \bar{2}\bar{1}1$	$122^\circ 28'$

Fig. 1.



Observed combinations:— $100, 111$; $100, 111, 211$; $100, 011, 111, 211$; $100, 110, 210, 111, 211$; $100, 011, 110, 210, 111, 211$.

No cleavage observable.

From the observed minimum deviation of the brightest part of the solar spectrum formed by refraction through the faces $100, \bar{1}10$, it appears that the index of refraction of a ray in the plane 001 , and polarized in that plane, is about 1.817 . The refrangibility of the other ray is greater, its minimum deviation through the same faces being 93° nearly.

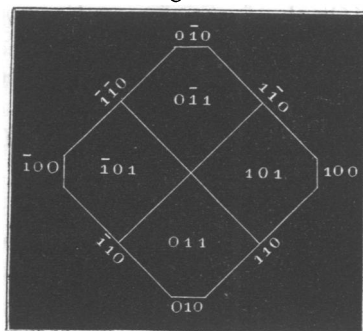
Sulphocyanide of Thallium.

Pyramidal, $001, 101 = 38^\circ 20'3$.

Observed forms:— $100, 110, 101$.

Fig. 2.

100, 010	90° 0'
100, 110	45 0
100, 011	90 0
100, 101	51 39·7
110, 101	63 59
101, $\bar{1}01$	76 40·6
101, 011	52 2



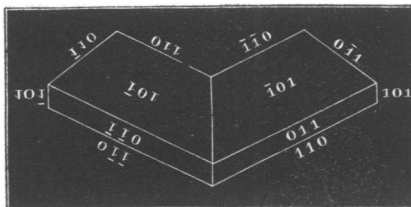
Observed combinations :—110, 101 ; 100, 110, 101.

The crystals are remarkable for the very unequal extension of the faces of the same simple form, and at first sight look as if they belonged to the oblique system. The breadth and thickness of one of the largest crystals were 1·1 and 0·055 millimètre respectively ; and of two adjacent faces of the form 101, one was about eleven times the breadth of the other. The distribution of the large and small faces did not appear to be subject to any law ; so that these crystals cannot be regarded as combinations of large and small hemihedral forms.

Twins. Twin face 101.

101, $\bar{1}01$	180° 0'
110, 011	52 4
$\bar{1}10$, 011	—52 4
011, 110	75 56
011, $\bar{1}10$	75 56
$\bar{1}01$, 101	26 38·8

Fig. 3.



No cleavage observable.

An attempt was made to determine the optical constants of the crystal by observing the minimum deviation of light refracted through a face of the form 110 and one of the opposite faces of the form 100 ; the latter were, however, so small that the observation could not be made with much accuracy. It appeared that for the ordinary ray polarized in a plane parallel to the line 001, the indices of refraction of red light, of the brightest part of the spectrum, and of violet light were about 2·115, 2·159, and 2·314 respectively, and that, for the extraordinary ray polarized in the plane 001, the indices of refraction of red light, the brightest part of the spectrum, and of violet light were about 1·890, 1·973, and 2·143 respectively.

